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Fig. 1a

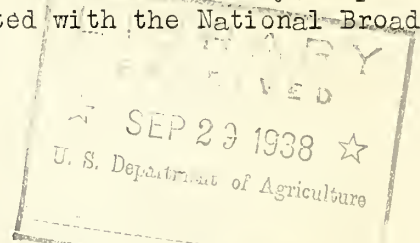
PRUNING THE FARM WOODLAND

An interview between Arthur Koehler, Wood Technologist, Forest Products Laboratory, U. S. Forest Service, Madison, Wisconsin, and Everett Mitchell, NBC Announcer, broadcast during the National Farm and Home Hour Friday, September 9, 1938, by a network of 90 stations associated with the National Broadcasting Company.

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JOHN BAKER:

Now, let's talk about forests.



Last month we heard from the Forest Products Laboratory of our Forest Service about the value of woodlands on the farm, and ways to improve the marketing of farm timber. Today Mr. Arthur Koehler, of the Laboratory, is going to describe a sure way to improve the quality of farm timber -- and that is, pruning. Mr. Koehler knows the answers - - - I'm sure we can count on Everett Mitchell for plenty of questions! How about it, Everett - - - Have you got your questions all lined up!

EVERETT MITCHELL:

All lined up, and ready to go. I know that Mr. Koehler's work as a wood technologist often brings him before the public as a sort of super-detective, and my first question -- Well, Mr. Koehler, ever since the Lindbergh kidnapping case, when you testified as to the kind of wood used in a certain ladder, I've been wondering about the connection between court cases and wood research.

KOEHLER:

The court cases are only a special application of my research work at the Laboratory, which in general has to do with the way wood grows, and the characteristics and peculiarities it has as a result of varying growth conditions. We study the grain, the fiber, and the knots in wood, and we know quite definitely, for instance, how the branching habits of a tree affect the quality of its timber. Of late we have made a detailed study of the effects of pruning the branches.

MITCHELL:

You mean pruning trees in the woods as you would prune an orchard?

KOEHLER:

Yes, and no. Orchards are pruned to improve the fruit crop. Woodland trees are pruned to improve the timber crop. In the fruit tree we want vigorous, productive branches; but in timber we want a smooth, straight trunk, as free of branches as possible.

MITCHELL:

Will you explain why that is.

KOEHLER:

Because limbs on the tree produce knots in the wood. Knot-free lumber -- clear lumber, as it is called -- always brings a better price than knotty lumber. In some instances the difference is as much as \$25 per thousand board

(over)

feet. That is important to the man who has timber for sale on his place.

MITCHELL:

I agree with you. Just how do limbs produce knots in lumber?

KOEHLER:

Every limb is deeply socketed in the wood, usually with a base that reaches clear to the heart of the tree. When you cut lumber, every time the saw goes through this limb-base, you get a round or an oval slice of it running through the board -- in other words, a knot. But if you prune off the limb, you will stop knot formation at that particular place.

MITCHELL:

In other words, pruning the limb makes the knots disappear.

KOEHLER:

Yes, from then on -- as soon as the stub heals over. It does not, of course, eradicate the base of the limb back of the cut; but it stops any further knot formation.

MITCHELL:

I see, -- But why should any one start pruning the woods now, when we've got along without it all this time?

KOEHLER:

We are living in a new forest age in this country, Mr. Mitchell -- the age of second-growth. The virgin forest had centuries to grow and prune itself, and give us all the clear lumber we needed. But now we must depend more and more on the trees growing up around us -- on farm woodlands and in small holdings. In order to make timber growing profitable, trees must be cut and utilized at a much younger age. This will mean a much higher percentage of knotty wood -- unless something is done about it.

MITCHELL:

You spoke of self pruning in the natural forest. Doesn't nature work the same way now as in the past?

KOEHLER:

Exactly; but nature prunes a tree slowly, and from the timber standpoint, rather inefficiently.

MITCHELL:

Oh, indeed!

KOEHLER:

Perhaps I had better explain myself there.

MITCHELL:

Yes, please.

KOEHLER:

Natural pruning or self-pruning goes on at its best when trees grow close

together in the deep forest. What happens is this: the lower branches in a thick stand get so little sunshine that they die gradually, from the base of the tree upward. In a tall, old tree you may find the living branches away up -- forty, fifty, maybe ninety feet above the ground. Down below, many branches have dropped off, and their stubs have been overgrown smooth with wood and bark. A bit higher, you may see dead stubs still sticking out, or even an old limb, decayed or dying but not ready to fall. There you have self pruning in progress.

MITCHELL:

That brings us back to my original question. Why can't the farmer let nature do the work for him?

KOEHLER:

Because with a saw you can do the job quicker and better. When a dead branch decays and drops off, it generally leaves a stub sticking out, and no clear wood will be formed until the whole length of the stub is grown over. Sometimes great, forked snags, like a deer's horn, are found embedded in the wood. That takes time, and it also takes away money. So, what would you do?

MITCHELL:

Well, I suppose you would cut off the dead limb and be done with it. About how long does a limb hang on?

KOEHLER:

That varies a lot. In hardwoods, the smaller branches usually break off within a few years after they are dead. In the conifers or softwoods, even small branches may hang on indefinitely. In white pine, we found branches no thicker than your little finger that persisted for fifty years after they died, and we have a sample of Douglas fir in which a limb had been dead for 240 years -- ever since Colonial times -- and its stub was still sticking out through the bark.

MITCHELL:

That must be a record of some kind! How, though, do you tell just when the branch died?

KOEHLER:

When a branch dies, the annual layers of wood growth no longer join up with the branch base, but begin to grow around it, as though it were a foreign body. By counting the annual layers that grow around it, from that point out to the bark, we know very accurately how long ago it died. Then was when pruning was needed -- because from that time on the worst damage to lumber quality occurred.

MITCHELL:

How so?

KOEHLER:

Because, while the branch lives, the knots you get will be sound and tightly intergrown with the wood, and they will stay firm in the board. The lumber will make attractive interior finish, and for many purposes it may be

almost as useful as clear wood. --After the limb dies, however, you get loose, sometimes rotten, knots; and they are different.

MITCHELL:

The kind that fall out! That makes knot holes!

KOEHLER:

That's it, exactly, these loose knots are no more a part of the wood than a volley of rifle balls shot through it. They do more than any other one defect to lower lumber values. --If I could let you look inside a self-pruned tree, you would see wood in three zones; outside, a layer of clear wood, more or less free of all knots; inside that, a zone of dead and buried stubs, giving lumber with the loose, unsound knots; from there inward to the heart, the zone of sound branch bases, giving lumber with tight or intergrown knots. -- But practically always you find that the outside clear wood is the least in amount -- while the low-grade, knotty material is there in abundance. That will help to explain why pruning would be a good thing -- to assist nature.

MITCHELL:

I see the point. . . It would certainly eliminate the zone of dead stubs and knot holes. By the way, I suppose it's more important to cut off dead limbs than live ones?

KOEHLER:

The dead ones should come off, by all means; but on open woodlands and in pastures there are trees that should lose a lot of their lower live branches, too, if you want them for timber, and not Christmas trees.

MITCHELL:

How big would you say a tree should be when it's pruned?

KOEHLER:

The pruning should be done when the tree is comparatively small -- not over 3 or 4 inches in diameter -- so as to produce clear lumber as soon as possible.

MITCHELL:

How far up can the pruning be carried?

KOEHLER:

With a good pole saw, it is practical to prune to about 17 feet above the ground, so as to produce a standard 16-foot log. First you can prune up to about 10 feet, when the tree is small; then, five or six years later, you can go the rest of the way.

MITCHELL:

What methods of pruning do you recommend?

KOEHLER:

Use a saw rather than an ax; cut smoothly, close to the bark of the tree. And you don't need to trim up everything in sight. It is more important and also better practice to prune your softwoods, such as pine, than hardwoods,
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like oak or maple. Prune only the trees that should be left to grow to saw log size -- the more promising ones. The poorer trees that you will eventually cut for firewood, pulpwood, posts, and the like, can be left alone. Late fall or winter is a convenient time to prune, with the least harm to the tree.

MITCHELL:

Have any special tools been developed for pruning?

KOEHLER:

Yes; specially designed pruning saws and clippers are on the market. The most economical work, of course, is done from the ground. For heights above 8 or 9 feet, either a long-handled tool or else a ladder is needed.

MITCHELL:

Thank you very much for some interesting ideas, Mr. Koehler; as our time is nearly up, I am sure many of our hearers would like to have more inside information about pruning for timber production. Have you published anything on the subject?

KOEHLER:

We have an illustrated bulletin on pruning, which will soon be off the press, and a limited number of copies will be available for free distribution. We shall be glad to send these out on request.

MITCHELL:

A card or letter to the Forest Products Laboratory will bring one of these bulletins free?

KOEHLER:

Yes, as long as they last.

MITCHELL:

If you need one of the limited free copies of this publication, Farm and Home folks, write a card to the FOREST PRODUCTS LABORATORY, and ask for the PRUNING BULLETIN. The address, again, is Forest Products Laboratory, MADISON, WISCONSIN. And the bulletins will be sent as soon as they are printed.
